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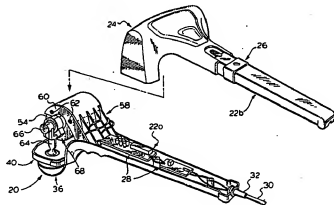
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(54) Title: BODY MASSAGER



(57) Abstract

A body massager including a casing (24) having a slender elongate handle (22a, 22b) with a massage head (20) extending generally transversely of the handle (22) at one end. The massage head (20) has an external massage surface contoured symmetrically about a median plane and is mounted for pivotal rocking movement about an axis in that plane. The handle (22) is arranged so that its longitudinal axis also lies in that plane and the massager is balanced about the plane. The massage head (20) is driven by an electric motor (54) which is suspended from an overhead motor mount bracket (53). Rocking movement of the massage head (20) is controlled by a pair of resiliently compressible sleeves on opposite side of the pivot axis for the head. The massage surface is provided by hemispherical formations (34, 36) which have removable covers (46) so that internal cushion members can be changed for different massage effects.

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**Title: BODY MASSAGER****FIELD OF THE INVENTION**

This invention relates generally to power operated body massagers.

**5 BACKGROUND OF THE INVENTION**

Traditionally, doctors, chiropractors and other professional therapists have used power operated massagers to give treatment involving manipulation of body structures. Therapy of this type has been found particularly effective in treating muscle tension and fatigue, for example in athletes.

**DESCRIPTION OF THE PRIOR ART**

Generally, most prior art massagers exert an orbital rubbing action on the body. However, this type of action often causes irritation or other discomfort to the patient. Further, it is thought that the therapeutic effect of this type of rubbing action may not be particularly beneficial and that a percussive massage action may be preferred. Massagers operating on this principle have also been proposed. Examples are shown in United States Design Patent No. 261,428 and in United States Patent No. 4,150,668.

United States Patent No. 4,730,605 issued March 15, 1988 to Edward D. Noble and Duke Harding and assigned to Wellness Innovations Corp. also discloses a percussive massager. This particular massager is designed primarily for use by health professionals, rather than for home use. The massager has a casing with two handles, one at each side, and is intended for two-handed operation. As such, it is difficult to use the massager for self massage, other than on frontal portions of the body. Except through unusual body contortions, it is virtually impossible for the person holding the massager to use it on his or her own shoulder areas, for example.

Accordingly, an object of the present invention is to provide a massager that is specifically designed so

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as to be capable of use for self massage.

The invention also aims to provide other improvements in percussive massagers generally.

SUMMARY OF THE INVENTION

5 According to one aspect of the invention there is provided a body massager which includes a massage head having an external surface contoured symmetrically about a median plane generally normal to a notional plane representing a surface to be massaged, in which the  
10 massage head is coupled to a base structure for pivotal rocking movement about an axis in the said median plane, for percussive massage of the body,. A drive unit carried by the base structure is coupled to the massage head for producing the required rocking movement of the head. The  
15 base structure includes a casing having a slender elongate handle for manipulating the massager. The handle extends about a longitudinal axis disposed in the said median plane and the massager is balanced about that plane.

It has been found that a massager having these  
20 features is particularly suitable for self massage and as such is appropriate for home use. By virtue of the slender elongate form of the handle, the user can hold the massager in one hand and can conveniently reach most areas of his or her own body on which a massage effect is  
25 required. The massager is stable in use and does not vibrate or rock in such a way as to make it difficult to hold. Since the massager is balanced about a median plane which contains the pivot axis of the massage head and the longitudinal axis of the handle, the rocking motion  
30 that is imparted to the massage head when the massager is in use tends to cause a reaction that manifests itself as a slight back and forth twisting action of the handle about its longitudinal axis. This action can readily be resisted by the user grasping the handle. There are no  
35 reactive forces that make it difficult to hold the massager.

According to another aspect of the invention

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that may be applied to massagers other than those of the form defined previously, the drive unit includes an electric motor extending about a longitudinal axis and the motor is disposed generally transverse to the median plane about which the massage head rocks. The motor is coupled to the base structure of the massager by a mounting bracket that extends upwardly from the handle and embraces the motor from above, so that the motor is essentially suspended from the base structure. A bracket that depends from the motor can then be used to carry a pivot shaft about which the massage head can rock. In this aspect of the invention the motor essentially becomes part of the base structure of the massager.

Another aspect of the invention that may also be applied to other forms of massager includes a massage head of the general form defined previously, in which the rocking motion of the head about its pivot axis is limited by a pair of resiliently compressible elements or "bumpers" disposed on opposite sides of the pivot axis of the massage head and extending between the head and the base structure so that the elements are alternately, and oppositely, compressed and relaxed by the rocking motion of the massage head.

A still further aspect of the invention that may also be applied to other forms of massager involves the contoured configuration of the massage surface. The contours are provided by at least two generally hemispherical formations on respectively opposite sides of the median plane of the surface. Each formation is defined by a relatively rigid dome-shaped inner base element, a generally hemispherical outer cover removably coupled to the base element, and an intermediate and separate cushion member disposed between the base element and the cover and held to the base element by the cover. The characteristics of the cushion member are selected to provide the required massage effect. The cushion member can be changed for another cushion member having different

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message characteristics, simply by removing the cover, changing the cushion member and replacing the cover. In this way, the message characteristics of the massager as a whole can easily be changed.

5 BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more clearly understood, reference will now be made to the accompanying drawings which illustrate a particular preferred embodiment of the invention by way of example, and in  
10 which:

Fig. 1 is a partially exploded perspective view of a body massager in accordance with a preferred embodiment of the invention;

Fig. 2 is a side elevational view corresponding  
15 to Fig. 1, with the massager shown assembled and the casing partly broken away;

Fig. 3 is a sectional view generally along the line denoted 3-3 in Fig. 2; and,

Figs. 4 and 5 are somewhat schematic exploded  
20 perspective views illustrating other features of the massager.

DESCRIPTION OF PREFERRED EMBODIMENT

The drawings show what might be termed a "self use" body massager designed for one-handed operation  
25 (although there is of course no limitation to self use). The massager has a generally T-shaped configuration overall, and comprises a slender elongate handle with a transverse portion at one end.

In Fig. 1, the message head is generally  
30 indicated by reference numeral 20 but is only partly visible. The handle includes a fixed lower handle portion 22a and a removable, upper handle portion 22b which is part of a larger plastic moulding generally denoted 24. When assembled, moulding 24 is fitted to the base  
35 structure and held in place by screws (not shown). The moulding forms a shroud or casing which encloses the working parts of the massager. An electrical slide switch

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generally indicated at 26 is incorporated in the moulding for switching the massager on and off.

The lower handle portion 22a is also a plastic moulding and acts as a housing for other electrical components generally indicated at 28. A power cord 30 extends from the distal end of the handle, via a grommet 32. When the massager is assembled, the switch 26 co-operates with electrical components 28 to allow the drive unit of the massager (to be described) to be switched on and off. Since the electrical components themselves and the particular configuration of the switch are not part of the present invention and may be conventional, details thereof have not been given.

Fig. 2 shows the massager assembled and perhaps better illustrates the slender elongate configuration of the handle. Fig. 2 also shows that the handle extends about a longitudinal axis A.

Fig. 3 shows the massage head 20 in detail. The head has an external massage surface that is contoured symmetrically about a median plane P generally normal to a notional plane N representing a surface to be massaged. The actual massage surface of the massage head is, in this embodiment, defined by a pair of generally hemispherical structures denoted 34 and 36 which are symmetrical about plane P. The two structures are essentially identical except that one of the structures is coupled to a drive unit 38 (to be described) of the massager.

In this embodiment, the massage surface is shown as being provided by two hemispherical structures only, but it is to be understood that a larger number of hemispheres could be provided symmetrically about plane P. Reference may be made to the assignee's U.S. Patent No. 4,730,605 for an illustration of a multiple hemisphere massage surface.

The massage head includes a base 40 which is a relatively rigid plastic moulding shaped to provide a pair of dome-shaped inner base elements 42 and 44 within the

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respective massage hemispheres 34 and 36. Referring to hemisphere 34 by way of example, the massage sphere is completed by a generally hemispherical cover 46 and an intermediate cushion member 48 that occupies substantially the entire space between the base element 42 and the cover 46. Cover 46 is a rubber or other resilient moulding of hemispherical shape with an inwardly directed flange 46a generally at the diameter of the hemisphere, which engages in a complimentary groove 50 around the base of the dome-shaped base element 42. Thus, cover 46 can be removed by resiliently distorting the cover so as to pull the flange 46a out of groove 50. Cushion member 48 may be made of foam rubber or other resilient material having characteristics selected to provide for an appropriate massage effect on the surface S to be massaged. By removing cover 46 and replacing the cushion member 48 with a member having different characteristics, the massage effect can be varied as desired.

In practice, the massager would be inverted, the cover 46 essentially "rolled" out of the groove 50 by an upward rolling action applied to the perimeter of the cover, for example by the user's thumbs. Fig. 5 shows by way of example, hemisphere 34 in this orientation with the cover 46 and the cushion member 48 shown in exploded positions. A chamfered surface 52 is provided on moulding 40 adjacent groove 50 to aid removal of the cover in this fashion.

It should be understood that this aspect of the invention may be applied to massagers other than of the form specifically described and illustrated herein. For example, this aspect of the invention could be applied to a massager of the form shown in the '605 patent mentioned above.

Referring back to Fig. 3, drive unit 38 comprises an electric motor 54 which has an output shaft 56 extending about an axis B normal to median plane P. In other words, the motor is disposed with its axis



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transverse to the longitudinal axis A of the massager handle 22 (as shown, for example, in Fig. 1). With continued reference to that view, it will be seen that

5 motor 54 is mounted to the lower handle portion 22a of the massager by a motor mount bracket 58 that extends upwardly from the lower handle portion and curves over and around the casing of the electric motor so as to in effect embrace the motor from above. End portions of the bracket

10 58, one of which is visible at 60, extend across respective end portions of the motor casing and are secured thereto by screws 62 so that the motor is in effect suspended from bracket 58. In this particular embodiment, the motor mounting bracket 58 is formed

15 integrally as part of the same plastic moulding as lower handle portion 22a, although it is to be understood that this is not essential. It should also be noted that this form of "suspension" motor mount can be used in a form of massager other than that specifically described herein.

20 It can also be seen from Fig. 1 that the motor output shaft 56 is coupled to the massage head by a link 64 which is captive on the outer end of shaft 56 but within which the shaft can rotate. Link 64 is a plastic moulding which provides at its upper end an eccentric

25 bearing 66 on shaft 56. Accordingly, as shaft 56 rotates, link 64 imparts a generally up and down oscillatory motion to the massage head. An eccentric counterbalance weight 68 is also provided on shaft 56 to dynamically balance the drive unit and avoid undesirable vibrations when the drive

30 motor is running.

As best seen in Fig. 3, link 64 has at its lower end an enlarged head 70 which includes a shank 70a of reduced diameter, to which is fitted a resilient annular disk 71. Disk 71 is held in place in a recess 50a in the

35 plastic moulding 40 of the massage head by a ring 72 that is secured to the moulding by three screws, one of which is shown at 73. Ring 72 is generally annular but has a flat across its external circumferential edge.

It was noted previously that motor 54 is

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suspended from motor mount bracket 58. The massage head 20 is in turn suspended from motor 54 by a bracket 74 (Fig. 3) that is bolted to the motor casing in much the same fashion as motor mount bracket 58 (see Fig. 1). Bracket 74 carries a depending sleeve indicated as 76, which aligns with a pair of similar sleeves (not specifically shown) on the massage head moulding 40. The sleeves on the moulding are at opposite ends of sleeve 76 and a pivot pin 78 connects the three sleeves and provides for pivotal mounting of the massage head on bracket 74. It will be seen that pivot pin 78 is positioned on the median plane P of the massage head.

Rocking motion of the massage head about pivot pin 78 is controlled by a pair of resiliently compressible sleeves 80, 82 that are disposed on opposite sides of the pivot pin 78 and extend between the massage head moulding 40 and the motor bracket 74. It will be appreciated from Fig. 3 that the two sleeves 78 and 80 are alternately and oppositely compressed and relaxed as the massage head 20 rocks about pivot pin 78. The sleeves act to in effect damp the rocking motion. By appropriately selecting the dimensions and characteristics of the sleeves the amount of damping and hence the nature of the percussive massage action can be appropriately controlled.

Fig. 4 shows sleeve 80 by way of example and illustrates in some detail how the sleeve is located between the motor bracket 74 and moulding 40. Thus, it will be seen that a generally cone-shaped depression or "dimple" 84 extends downwardly from bracket 74 into the upper end of the sleeve. At its lower end, sleeve 80 is received in an annular formation 86 on moulding 40. It will be appreciated that this arrangement allows the sleeves to be changed quite easily if necessary.

As noted previously, an important feature of applicant's invention is that the massager has a slender elongate handle extending about a longitudinal axis that is positioned in the median plane of the massage head and

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that that plane also contains the pivot axis for the head. As shown in Fig. 2, the axis A of the handle is also positioned to intersect the longitudinal axis B of the drive unit motor 54. It is also important that the

5 massager be symmetrically balanced about median plane P by appropriate design and positioning of the various components of the massager and, in particular, appropriate positioning of the motor and its associated components with respect to plane P (see Fig. 3).

10 It should finally be noted that the preceding description relates to a particular preferred embodiment of the invention only and that many modifications are possible within the broad scope of the invention. Some of those modifications have been indicated previously and  
15 others will be apparent to a person skilled in the art. In particular, it should be noted that various features of the invention may be used independently of other such features, as has been noted above.

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I CLAIM:

1. A body massager comprising:  
a base structure;  
a message head having an external message  
5 surface contoured symmetrically about a median plane  
generally normal to a notional plane representing a  
surface to be massaged, the message head being coupled to  
the base structure for pivotal rocking movement about a  
pivot axis in said median plane for exerting a percussive  
10 message effect; and,  
a drive unit carried by said base structure and  
coupled with said message head for producing said rocking  
movement of the head;  
said base structure including a casing having a  
15 slender elongate handle for manipulating the massager, the  
handle extending about a longitudinal axis and being  
disposed with said axis in said median plane, the massager  
being balanced about said plane.
2. A massager as claimed in claim 1, wherein said  
20 drive unit comprises an electric motor having a driven  
rotary output shaft, and a link extending between said  
shaft and said message head and including an eccentric  
bearing on said shaft, the link being coupled to the  
message head at a position spaced from said median plane  
25 for converting rotary motion of the output shaft into  
rocking motion of the message head about said pivot axis,  
and wherein said electric motor is positioned with its  
output shaft co-incident with said longitudinal axis of  
the handle.
- 30 3. A massager as claimed in claim 2, wherein said  
handle includes a fixed lower portion and a separable  
upper portion, said upper portion forming part of a casing  
which encloses said drive motor.

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4. A massager as claimed in claim 3, further comprising a motor mount bracket which extends upwardly from said handle lower portion and extends around and embraces said drive motor from above, so that the motor is  
5 suspended from said motor mount bracket, said casing enclosing said motor and bracket.

5. A massager as claimed in claim 4, further comprising a bracket coupled to and extending downwardly from said motor and providing means mounting said message  
10 head for rocking motion about said pivot axis.

6. A massager as claimed in claim 5, further comprising a pair of resilient members disposed between said message head and said motor bracket so as to be alternately and oppositely compressed and relaxed as a  
15 consequence of said rocking movement of the message head, for controlling said movement.

7. A massager as claimed in claim 6, wherein said resilient members are cylindrical sleeves, each having a first end received in a complimentary recess in said  
20 message head, and a second end receiving a locating formation on said motor bracket.

8. A massager as claimed in claim 1, wherein said message surface is contoured to provide at least two generally hemispherical message formations disposed  
25 symmetrically on opposite sides of said median plane.

9. A massager as claimed in claim 8, wherein each said message formation comprises a dome-shaped inner base element, an outer cover which is removably coupled to said base element, and a separate and replaceable intermediate  
30 cushion member between said base element and said cover, said cushion member having resiliency characteristics selected to provide for a desired message effect.

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10. In a body massager having a massage head for providing percussive massage, and including an external massage surface having at least one formation of generally hemispherical shape, the improvement in which:

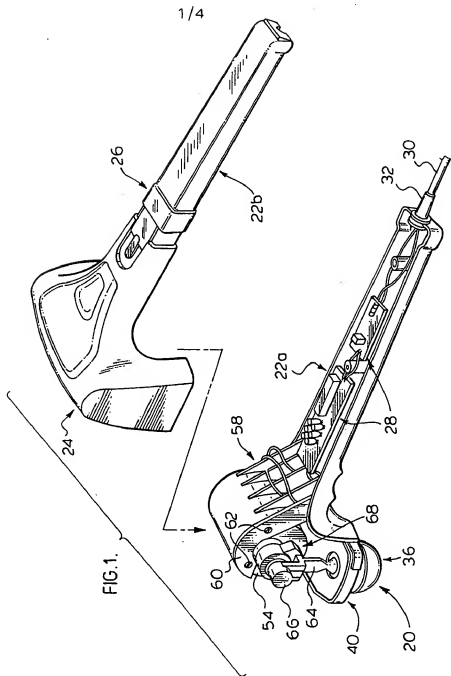
- 5 each said formation comprises a dome-shaped inner base element, an outer cover which is removably coupled to said base element, and a separate and replaceable intermediate cushion member between said base element and said cover, said cushion member having  
10 resiliency characteristics selected to provide for a desired massage effect.

11. In a body massager having a massage head mounted for pivotal rocking movement with respect to a base structure about a pivot axis, in which the massage head  
15 has a massage surface contoured symmetrically on opposite sides of said axis, the improvement comprising:

- a pair of resilient members positioned on opposite sides of said axis and extending between said massage head and said base structure so as to be  
20 compressed and relaxed alternately and in opposition to one another as said massage head rocks about said axis, for controlling said rocking action.

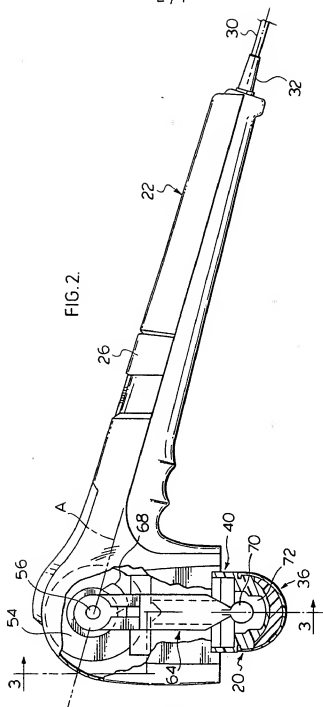
12. In a body massager having a base structure, a massage head having an external massage surface for percussive massage of the body, the massage head being  
25 coupled to the base structure for pivotal rocking movement about a pivot axis, and a drive unit carried by the base structure and coupled to the massage head for producing said rocking movement, in which the drive unit includes a  
30 electric motor extending about an axis normal to said pivot axis, the improvement comprising:

- a motor mount bracket which forms part of said base structure and which is configured to extend above and embrace said electric motor from above, suspending the  
35 motor from said bracket.



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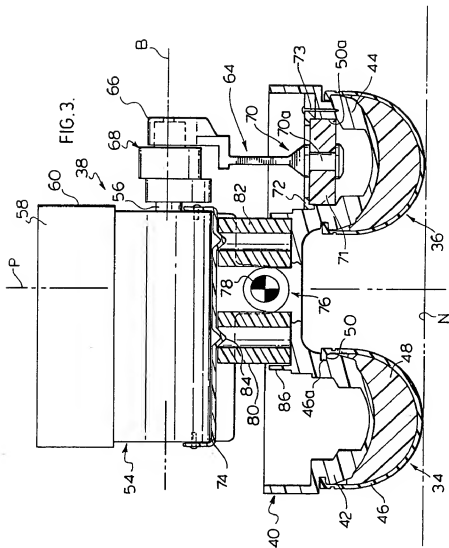
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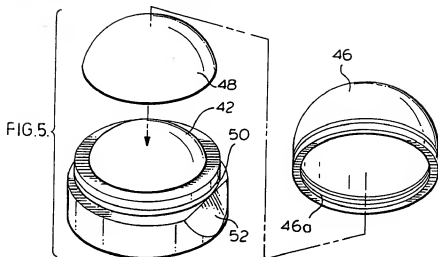
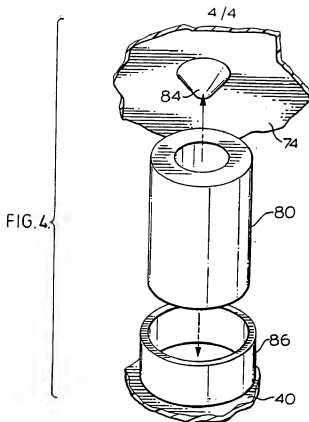
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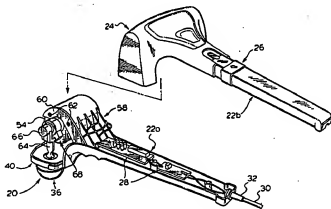
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<p>(21) International Application Number: PCT/CA95/00167</p> <p>(22) International Filing Date: 23 March 1995 (23.03.95)</p> <p>(30) Priority Data: 08/223,183 5 April 1994 (05.04.94) US</p> <p>(71)(72) Applicant and Inventor: NOBLE, Edward, D. [CA/CA]; 25 Austin Drive, #821, Unionville, Ontario L3R 8H4 (CA).</p> <p>(74) Agent: BERESKIN &amp; PARR; 40 King Street West, 40th floor, Toronto, Ontario M5H 3Y2 (CA).</p>		<p>(81) Designated States: AU, CA, CN, IS, JP, KR, SG, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 16 November 1995 (16.11.95)</p>

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A body massager including a casing (24) having a slender elongate handle (22a, 22b) with a massage head (20) extending generally transversely of the handle (22) at one end. The massage head (20) has an external massage surface contoured symmetrically about a median plane and is mounted for pivotal rocking movement about an axis in that plane. The handle (22) is arranged so that its longitudinal axis also lies in that plane and the massager is balanced about the plane. The massage head (20) is driven by an electric motor (54) which is suspended from an overhead motor mount bracket (58). Rocking movement of the massage head (20) is controlled by a pair of resiliently compressible sleeves on opposite side of the pivot axis for the head. The massage surface is provided by hemispherical formations (34, 36) which have removable covers (46) so that internal cushion members can be changed for different massage effects.

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## INTERNATIONAL SEARCH REPORT

mail Application No

PCT/CA 95/00167

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61H23/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,4 150 668 (JOHNSTON) 24 April 1979 cited in the application	1,2,8
Y	see column 3, line 29 - line 61; figures	3
A	---	9
Y	EP,A,0 001 833 (METRONIC ELEKTRO-GERÄTE GMBH) 16 May 1979 see page 7, line 21 - page 8, line 14; figure	3
X	US,A,2 964 037 (JOHNSTON) 13 December 1960 see claim 1; figure 1	1,2,8
X	GB,A,498 228 (PETERS ET AL.) 2 February 1939 see page 2, line 45 - line 70; figures 2,3	1,2,8
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## INTERNATIONAL SEARCH REPORT

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C/(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CH,A,233 980 (HOFFMANN) 1 December 1944 see page 2, line 25 - line 33; figures ---	1,2,8
A	US,A,4 730 605 (NOBLE ET AL.) 15 March 1988 cited in the application see abstract; figures -----	1,8

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA95/00167

**Box I** Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II** Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims: 1-9 Body massager with slender elongate handle
  2. Claim : 10 Body massager with hemispherical formation having a replaceable intermediate cushion member
  3. Claim : 11 Body massager with resilient members between head and base
  4. Claim : 12 Body massager with motor suspended from a mount bracket
1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-9

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 95/00167

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4150668	24-04-79	NONE	
EP-A-0001833	16-05-79	DE-A- 2749883	10-05-79
US-A-2964037	13-12-60	NONE	
GB-A-498228		BE-A- 422438	
		DE-C- 669929	
		FR-A- 823929	28-01-38
CH-A-233980		NONE	
US-A-4730605	15-03-88	CA-A- 1302817	09-06-92
		DE-A- 3685740	23-07-92
		EP-A, B 0229531	22-07-87